

SECTION 09690

CARPET TILE

LANL MASTER CONSTRUCTION SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the Engineering Standards Manual (ESM) Architectural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 / ML-4 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Carpet tiles, glue down adhesion.
- B. Accessories.

1.2 REFERENCES

- A. American Association of Textile Chemists and Colorists (AATCC)
 - AATCC 16, Test Method 16, Test Option 16E: Watercooled Xenon Arc Lamp, Continuous Light
 - AATCC 20 Fiber Analysis – Qualitative
 - AATCC 134 Electrostatic Propensity of Carpets
 - AATCC 165 Colorfastness to Crocking – AATCC Crockmeter Method
- B. American National Standards Institute (ANSI)
 - ISO 2551 Machine-made Textile Floor Coverings – Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions ISO 2551 (Aachen Test). (Previously DIN 54318, Aachen Dimensional Stability Test)
- C. American Society of Testing and Materials (ASTM)
 - ASTM D1335 Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings

- ASTM D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
- ASTM D3676 Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay
- ASTM D3936 Standard Test Method for Resistance to Delamination of Secondary Backing of Pile Yarn Floor Covering
- ASTM D5116 Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
- ASTM D5252 Standard Practice for the Operation of the Hexapod Drum Tester
- ASTM D5417 Standard Practice for the Operation of the Vetterman Drum Tester
- ASTM E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
- ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials

D. Carpet and Rug Institute (CRI)

- CRI Indoor Air Quality Program
- CRI TM101 Assessment of Carpet Surface Appearance Change
- CRI TM102 Fluorochemical Finishes
- CRI 104 Standard for Installation of Commercial Carpet

E. Consumer Product Safety Commission (CPSC)

- CPSC FF-1-70 Methenamine Pill Test

F. National Fire Protection Association (NFPA)

- NFPA 101 Life Safety
- NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems using a Radiant Heat Energy Source

1.3 SUBMITTALS

- A. Submit the following in accordance with the requirements of Section 01330.
 - 1. Catalog data on specified products, describing physical [and performance] characteristics; sizes, patterns, [colors available,] and method of installation.
 - 2. Manufacturer's certificate indicating that products meet or exceed the specified requirements and tests.
 - 3. Manufacturer's installation instructions indicating procedures for installing carpet products and accessories.
 - 4. Four carpet tiles illustrating color [and pattern design] for each carpet color selected.
 - 5. Shop drawings indicating layout of joints, direction of carpet weave and cut tiles.
 - 6. Maintenance data describing spot removal and maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning and shampooing.
 - 7. Project written warranty for all labor and materials, signed by Contractor, Installer and Manufacturer agreeing to repair or replace defective materials and workmanship of carpet installation during a [2] year period following final acceptance. Provide non-prorated 15 year warranty against wear and lifetime warranty against loss of anti-static properties, from date of substantial completion.
- B. Sustainability
 - 1. Submit manufacturer's documentation of recycled content for each product.
 - 2. Submit documentation of manufacturer's buyback, and/or recycling program.
 - 3. Submit manufacturer's documentation that carpet cushion and adhesives meet the Carpet and Rug Institute (CRI) Indoor Air Quality (IAQ) Testing Programs (Green Label) or comply with the following total volatile organic compounds (VOC) emissions criteria:
 - a. Carpet not to exceed 0.5 milligrams per square meter per hour
 - b. Cushion not to exceed 1.0 milligrams per square meter per hour
 - c. Adhesives not to exceed 10.0 milligrams per square meter per hour
- C. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm (material producer) with not less than 5 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.
- B. Installer Qualifications: Firm with not less than 5 years of experience in installation of commercial carpet tile of type, quantity and installation methods similar to work of this section.
- C. Labeling: A label meeting the Federal Labeling Requirements, as stated in the Textile Products Identification Act under the Federal Trade Commission, shall be attached to the certification samples and the products delivered.
- D. For each colorway, per floor, furnish carpet tile from one dye lot only.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Comply with CRI 104, Section 5, "Storage and Handling".
- B. Store materials for 3 days prior to installation in area of installation, to achieve temperature stability.
- C. Maintain minimum 70 degrees F ambient temperature three days prior to, during, and 24 hours after installation of materials.

1.6 EXTRA MATERIALS

- A. Provide [5 percent] of required quantity of carpet tiles of each color selected in their original containers.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Comply with Section 01630, Product Options and Substitutions.

2.2 MANUFACTURERS - CARPET TILE

- A. Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, those listed below.
 - 1. Collins & Aikman Floorcoverings, Inc. (www.powerbond.com)
 - 2. Interface Company (www.interfaceinc.com)

3. Lees Commercial Carpets Division/Burlington Industries, Inc.
(www.leescarpets.com)
4. Mannington Mills Inc. (www.mannington.com)
5. Milliken Contract Carpets (www.milliken.com)
6. Shaw Contract Group (www.shawcontract.com)

2.3 MATERIALS

- A. Compatibility: Provide carpet, adhesives, and other related materials that are compatible with one another and with substrates under conditions of service and application.
- B. Physical Performance Requirements:
 1. Appearance Retention Rating: Severe (short-term not less than 4.0, long-term not less than 3.5) based on ASTM D-5252 (Hexapod) using 3750-gram tumbler or ASTM D-5417 (Vettermann) test method. Carpets shall be tested without underlay. The exposure conditioned carpet shall be assessed according to CRI TM101.
 2. Tuff Bind: Minimum Average value, 8.0 pounds (Loop Pile).
 3. Dimension Stability: Maximum dimensional change plus or minus 0.2 percent.
 4. Delamination Resistance of the Secondary Backing: Not less than 2.5 pounds per inch.
 5. Colorfastness (entire colorline):
 - a. To Crocking: Color transfer Class 4 minimum, wet and dry, when tested as specified.
 - b. To light: Color contrast between the exposed and unexposed carpet areas equivalent to a minimum of Grade 4 on the Gray Scale for Color Change after an exposure to 60 AFU (AATCC fading units) for all colors.
 6. Fluorochemical Finish: Minimum average of 350 parts-per-million fluorine on the pile fiber when tested in accordance with CRI TM-102.
 7. Antimicrobial Activity: Inherently antimicrobial, topical finishes not allowed.
 8. Electrostatic Propensity: Maximum 3.5 kV.
 9. Flammability:
 - a. Methenamine Pill Test: Self Extinguishing – compliance with Federal Flammability Standards CPSC FF-1-70 when tested in accordance with ASTM D 2859.

- b. Radiant Panel: Minimum critical radiant flux of 0.45 watts per square centimeter.
- c. Smoke Density: Maximum 450

10. Indoor Air Quality:

- a. Carpet: Shall be only those certified with the CRI IAQ Carpet Testing Program Green Label, or tested for compliance to meet the CRI IAQ Carpet Testing Program requirements and criteria.
- b. Adhesive: Shall be only those certified with the CRI IAQ Adhesive Testing Program Green Label or tested for compliance to meet the CRI IAQ Adhesive Testing Program requirements and criteria
- c. All products (carpet, cushion and adhesives) from current production must be retested on a quarterly basis to ensure continuing compliance with CRI IAQ Test Program requirements.

C. Material Requirements:

- 1. Pile Fiber Type: 100 percent continuous filament nylon, Type 6 or Type 6.6.
- 2. Backing Materials:
 - a. Primary Backing: 100 percent synthetic materials.
 - b. Secondary Backing: Fiberglass reinforced secondary backing consisting of a polymeric cushion or hard back compound consistent with all performance testing requirements.
- 3. Recycled Content: Renewed nylon carpet, which is cleaned, retextured, recolored, or otherwise reused to produce new nylon carpet is acceptable; otherwise comply with the following recycled content requirements:
 - a. Nylon Carpet Face Fiber: 25 percent minimum total recovered materials content.
 - b. Nylon Carpet Backing: For vinyl primary backing, use the highest percentage of total recovered materials content available; however 0% is not acceptable.
 - c. Polymeric Cushion: Preference will be given to recycled content cushion backings.
- 4. All materials must be 100 percent recyclable.

D. Construction Requirements

- 1. Surface Texture: Level or textured loop, multi-level loop, or pattern.
- 2. Yarn: Multi-ply

3. Tufting Machine Gauge: Minimum 1/10 gauge
4. Number of Stitches: Minimum 8 per inch
5. Finished Pile Thickness: Minimum 0.125 inch, maximum 0.5 inch
6. Average Finished Pile Yarn Weight: Minimum 20 ounces per square yard.
7. Dye Method: Yarn or solution dyed.
8. Color: To be selected by the Architect and approved by LANL from Vendor colorline of product meeting this specification.

2.4 MANUFACTURED UNITS

- A. Product shall have a lead-time of not more than six (6) weeks from the time the dealer receives the order to the time LANL receives the product.
- B. Patterns and colorways shall be available for a minimum of ten (10) years.
- C. All products within the same floor of a project shall be from the same dye lot.

2.5 ACCESSORIES

- A. Sub-Floor Filler: [White premix latex] []; type recommended by carpet manufacturer for specific substrate material.
- B. Releasable Adhesive for Carpet: Provide water resistant, low VOC (not to exceed 10.0 milligram per square meter per hour), non-staining type as recommended by carpet manufacturer which complies with flame spread rating required for carpet installation.
- C. Concrete Sealer: Provide concrete sealer compatible with carpet backing material and adhesive.
- D. Carpet Edge Guard, Metallic: Extruded aluminum bend-down type edge guard with concealed gripper teeth and minimum 1 1/2 inch wide anchorage flange and minimum 5/8 inch wide face flange. Provide with anodized aluminum finish of colors selected by LANL from among standard colors available within the industry.
- E. Carpet Edge Guard, Non-metallic: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile indicated, with a minimum 2 inch wide anchorage flange; colors selected by LANL from among standard colors available within the industry.
- F. Vinyl Base: 4 inches high, coved, 0.080 inch gauge.
- G. Miscellaneous Materials: As recommended by manufacturers of carpet and other carpeting products for intended application.

2.6 SOURCE QUALITY CONTROL

- A. Flammability Tests
 - 1. Radiant Panel: ASTM E648, Class I
 - 2. Smoke Density: ASTM E662
 - 3. Methenamine Pill Test: Self Extinguishing (CPSC FF-1-70 or ASTM D 2859).
- B. Lightfastness: AATCC16E
- C. Crocking: AATCC 165
- D. Static Electricity: AATCC 134
- E. Dimensional Stability: ISO 2551
- F. Turf Bind: ASTM D1335
- G. Delamination Resistance: ASTM D3936
- H. Fluorochemical Finish: CRI TM-102
- I. Electrostatic Propensity: AATCC 134
- J. Indoor Air Quality: ASTM D5116
- K. Pile Fiber Identity: AATCC 20
- L. Backing Material Identity: AATCC 20
- M. Attached Backing:
 - 1. Thickness: ASTM D3676
 - 2. Volume Density: ASTM D3676
 - 3. Compression Resistance: ASTM D3676
 - 4. Compression Set: ASTM D3676
- N. Test in accordance with NFPA 253 (ASTM E-648) when applying the floor finish requirements of the Life Safety Code (NFPA 101) to DOE Facilities.
- O. Carpets and rugs should have a critical radiant flux not less than the following:
 - 0.45 watts per square centimeter in areas unprotected by an automatic fire suppression system and -0.22 watts per square centimeter in areas protected by an automatic fire suppression system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates for moisture content alkaline presence and other conditions under which carpet tile is to be installed. Provide Calcium Chloride test results to verify amount of moisture in new or existing slabs. Calcium Chloride shall be less than or equal to three (3) pounds per one thousand (1000) square feet in 24 hours. Alkalinity testing shall result in a pH range of 5-9. Notify LANL in writing of conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.
- B. Field verify all dimensions and other work conditions affecting the installation of carpet tile.
- C. The carpet covered by this specification is intended for end use applications that have a Severe Use Classification. It is the Contractor's responsibility to provide only products compatible with adjacent materials in the assembly.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Condition; Floor Preparation," and carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
 - 1. Concrete shall be cured, clean and dry before installation proceeds.
 - 2. Repair minor holes, cracks, depressions or rough areas using floor patching/leveling compound that is comparable with the adhesive to be used. Protrusions over 1/32 inch shall be leveled. Large patched areas shall be primed.
 - 3. Whenever a powdery or porous surface is encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for flue-down installation.
 - 4. Remove existing brass utility caps and install grout fill caps; grout level with existing substrate.
 - 5. Remove grease, oils, loose particles, paint, dirt, curing and parting agents, and all foreign substances. Clear away debris and scrape up cementitious deposits from surfaces to receive carpet tile; vacuum clean immediately before installation.
 - 6. Subfloor shall be level and smooth and free from scaling and irregularities per Carpet and Rug Institute acceptable standards (CRI 104).
 - 7. Coordinate carpet installation with any underfloor electrical/telephone/data so conductors and cables are pulled prior to carpet installation. Accessories (floor power/communications monuments) shall be installed on top of carpet after installation.

8. Sequence carpet tile installation with other work to minimize possibility of damage and soiling of carpet during remainder of construction period.
 9. Maintain room temperature at minimum 65 degrees F for at least 24 hours prior to installation and relative humidity at approximately that at which the area is to be maintained.
- B. Concrete (No Previous Flooring Material): Apply a concrete sealer coat at the rate recommended by the sealer manufacturer. Use thin, fast drying primers that are compatible with adhesives. Apply adhesive only after primer is completely dry.
 - C. Concrete (Previous Flooring Material): Remove existing adhesive by grinding with a concrete grinding machine and moist sand. Do not use solvents to remove adhesive. Apply concrete sealer at rate recommended by sealer manufacturer. Use thin, fast drying primers that are compatible with adhesives. Completely cover area with cutback neutralizer per manufacturer's recommendation.
 - D. Wood: Patch all surface irregularities and seal with wood sealer as recommended by manufacturer.
 - E. Vinyl Tile: Replace all loose, missing, and broken tiles with tiles of equal thickness making note of any special requirements with respect to asbestos. Strip existing tile of wax, dirt and other foreign substances. Completely cover area with cutback neutralizer per manufacturer's recommendations.
 - F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 13, "Carpet Modules (Tiles)," and carpet tile manufacturer's written instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work.
 1. Field verify all dimensions and other work conditions affecting the installation of carpet tile.
 2. Unless otherwise noted or approved on drawings, begin laying tile at centerline.
 3. Comply with carpet tile instructions for direction of carpet tile. Unless otherwise noted on drawings align pattern and pile in the same direction, parallel to the centerline of the area or room.
 4. Extend carpet tile under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space. Existing systems furniture shall be raised or removed to accommodate continuous carpet installation.
 5. Provide cut-out where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges.

6. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate. Use full-length strips only.
7. Expansion Joints: Do not bridge building expansion joints with carpet tile; provide for movement.
8. Carpet tile shall be free from movement when subjected to traffic.
9. Do not use pieces smaller than 1/3 of a standard tile without prior approval by LANL.
10. Provide mockup for approval by LANL of special cuts/effects such as mitered corners at borders or graphic patterns that are prepared and installed onsite.
11. Where there are floor finish material changes at doors, place centerline of abutting materials below door.

B. Glue Down Installation:

1. Fit sections of carpet tile into each space prior to application of adhesive. Trim edges.
2. Apply a full spread of adhesive uniformly to substrate in accordance with manufacturer's instructions unless otherwise indicated by LANL. Follow MSDS instructions for ventilation requirements. Butt carpet tile edges tightly together to form seams without gaps. Butt edges tightly to vertical surfaces. Eliminate air pockets and ensure uniform bond. Remove adhesive promptly from face of carpet tiles.

C. Self-adhesive Installation: Install per manufacturer's recommendation.

D. Miscellaneous Installation, Stairway Carpeting: Install per manufacturer's recommendation. Provide vinyl nosing at each riser. Match adjoining carpet installation.

E. Install vinyl base after completion of carpet work. Use adhesive recommended by vinyl base manufacturer.

F. Coordinate adhesive blocking areas with LANL when floating carpet tile over access flooring.

3.4 CLEANING AND PROTECTION

- A. Remove and dispose of debris and recycle all unusable scraps.
- B. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacture. Replace carpet tile where blemishes cannot be removed. Trim protruding face yarn from carpet tile surface. Vacuum carpet tile using commercial quality vacuum cleaner with face-beater element.

- C. Protect installed carpet tile to comply with CRI 104, Section 15, "Protection of Indoor Installations."
- D. Protect installation with a heavy, non-staining building paper. Do not use a moisture barrier such as plastic film. Maintain protection intact until final acceptance by LANL.
- E. Advise LANL of protection methods and materials necessary to prevent deterioration or damage until substantial completion.

3.5 CARPET REMOVAL

- A. All carpet tile and scraps removed from LANL projects shall be recycled or reapplied. Disposal of product in landfill is not permitted.
- B. Vacuum in-place carpet with industrial vacuum prior to demolition or debris-producing renovation.
- C. Remove carpet.
- D. Stack on pallets for handling.
- E. Store carpet off ground and under cover to prevent contamination of materials by water, foreign matter, or other causes.
- F. Coordinate with manufacturer for pick-up for recycle. In the case that the manufacturer does not have a recycling program, contact an independent recycling program such as:
 1. BASF 6ix Again: (800 839-3233) or www.basf.com
 2. Collins & Aikman floor carpet buyback program: (800 248-2878) or www.powerbond.com
 3. Dupont-Partnership for Reclamation: (800 328-7719) or www.dupontcommercial.com
 4. Honeywell/Evergreen Nylon Recycling: (804 520-3564) or www.n6recycling.com
 5. Shaw Inc./Inforum: (877 5027429) or www.shawcontract.com

END OF SECTION

Do not delete the following reference information:

FOR LANL USE ONLY

This project specification is based on LANL Master Construction Specification Rev 3, dated December 3, 2003.